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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification					February 2005			
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4			PE 0603382N Advanced Combat System Technology					
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	14.998	66.951	30.166	30.753	31.923	32.631	33.396	34.047
0324/Advanced Combat System Technology	12.659	66.951	30.166	30.753	31.923	32.631	33.396	34.047
9348/Improved Combat Information Center (CIC)	2.339	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RDT&e Articles Qty								
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In FY2004 the Advanced Combat System Technology line provided engineering studies, real time instrumentation, and risk reduction experiments that were conducted in a distributed computer architecture, radar technology, and Tactical Information Management (TIM) concepts in a computing testbed to mature them as transition candidates for introduction into warfare systems programs of record. It implements the results of system engineering experiments with currently emerging Commercial-Off-the-Shelf (COTS) computer technologies and distributed processing advances to replace the current computing architectures of various IWS programs with an open, distributed architecture. A priority is the design of the flow and display of tactical information through the "detect-control-engage" process to provide decision quality information. Funding is included to move all Naval systems to Open Systems Architectures and highly integrated systems of systems that will function in FORCEnet. FY2006 and FY2007 funding continues the effort to migrate all Navy combat systems to a common Open Architecture (OA) approach. This development effort is being undertaken in three parallel phases: (1) an Open Architecture Computing Environment (OACE) that provides a common computing architecture as a foundation. The OACE will be based on mainstream commercial-off-the-shelf (COTS) components and widely adopted open commercial standards. (2) Navy-wide system architectures that are extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements, and (3) the identification and development of common software components and functions and reuse methodologies. In summary, this funding supports system of systems engineering required across all Naval systems as they are migrated to function in a joint net centric warfare environment. PU 9438 is an FY2004 Congressional Add for Improved Shipboard Combat Information Center.								

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification			February 2005																															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology/9348 Improved Combat Information Center																																
B. Accomplishments/Planned Program																																		
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 30%;"></th> <th style="width: 15%;">FY 04</th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">5.475</td> <td style="text-align: center;">8.219</td> <td style="text-align: center;">7.617</td> <td style="text-align: center;">7.761</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>OA Technical Architecture – Participation and contribution of key technical expertise that enables the development of an OACE (Open Architecture Core Environment) based on widely adopted open international standards that provides a common computing architecture as a foundation that permits the use of affordable computing concepts while still meeting stringent combat system performance and survivability requirements. Key areas of technical expertise include, but are not limited to, physical media, information transfer, operating systems, middleware, information management, resource management, information assurance, time synchronization, programming languages, development tools, and displays and participation across platforms.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 30%;"></th> <th style="width: 15%;">FY 04</th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">1.826</td> <td style="text-align: center;">7.813</td> <td style="text-align: center;">7.302</td> <td style="text-align: center;">7.422</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px;"> <p>OA Functional Architecture – Continued participation of key technical expertise that enables the development of architectures connected by standardization of common functions and critical interfaces. Such architectures will be extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements across Platforms in the Joint Net-Centric Environment. This key technical expertise will also enable the identification and development of common warfare functions, applications, services, and computing programs and a reuse methodology. Process for initial Rapid Capability Insertion Process (RCIP) of new capability to end systems.</p> </div>						FY 04	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	5.475	8.219	7.617	7.761	RDT&E Articles Quantity						FY 04	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	1.826	7.813	7.302	7.422	RDT&E Articles Quantity				
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<div style="border: 1px solid black; padding: 10px; min-height: 60px;">OA Test Facility – Continued participation of key technical expertise that enables OA application portability validation, Program of Record OA migration risk mitigation, OACE technology evaluations, verification of OA with legacy systems (connection with DEP), proof-of-concept for RCIP.</div>																			
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<div style="border: 1px solid black; padding: 10px; min-height: 60px;">OA Technical Support Services – Provide Technical Support Services for OA in the following areas: War Room operations, Coordination with Programs of Record, Asset Repository, Integrated Development Environment (IDE), Risk Management, Cost Analysis and Business Case Analysis. Provides senior engineering architecture expertise.</div>																			

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	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost	0.000	1.000	0.997	0.997															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p>OA Technology Bridging - Provides the new front-work required to prepare for tomorrow's OA technologies in support of OA COTS Technology Refresh. Work with Science & Technology (S&T) communities (e.g. DARPA and Office of Naval Research (ONR)) to provide domain specific problems on which to focus S&T investment and validation of candidate technologies against these challenge domain specific performance requirements. Provide engineering quality lessons learned and benchmarking information back to S&T sponsors and technology developers for enhancements. Ensure that emerging technology advances can be inserted at the proper time and pace to enable the management of COTS obsolescence throughout the OA lifecycle via the Technology Refresh Process that meets the Fleet's Technology Insertion cycles.</p> </div>																			
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	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost	0.000	41.100	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p>AEGIS OA Common Components - Builds upon Aegis Open Architecture 3-Spiral plan to define Combat System level requirements that adhere to OA guidance for commonality (OACE Category-4) across USN combat systems. Design Aegis Weapon System elements to be re-usable across USN combat systems.</p> </div>																			
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<div style="border: 1px solid black; padding: 5px;"> <p>Improved Combat Information Center (CIC) - Congressional plus-up</p> </div>																			

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EXHIBIT R-2a, RDT&E Project Justification			February 2005	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603382N Advanced Combat System Technology	0324 Advanced Combat System Technology/9348 Improved Combat Information Center		
C. PROGRAM CHANGE SUMMARY:				
Funding:	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 04-05 Pres Controls)	5.730	67.605	61.637	31.168
Current BES: (FY06 PB)	14.998	66.951	30.166	30.753
Total Adjustments	9.268	-0.654	-31.471	-0.415
Summary of Adjustments				
Programmatic Adjustment		-0.014	-31.471	-0.415
Undistributed Congressional Adjsutements		-0.640		
FY04 SBIR	-0.019			
Cancelled Account	-0.008			
Execution Realignment	9.297			
FY04 Non-pay Inf	-0.002			
Subtotal	9.268	-0.654	-31.471	-0.415
Schedule:				
N/A				
Technical:				
N/A				

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RDT&E, N / 1319 BA-4		0603382N Advanced Combat System Technology			0324 Advanced Combat System Technology/9348 Improved Combat Information Center					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
E. ACQUISITION STRATEGY:										
Risk reduction efforts are lead and cordinated by NSWC/Dahlgren, the Open Architecture (OA) Technical Authority for PEO IWS 1.0. Open Architecture Technical Guidance documentation is produced and disseminated to the various programs of record for their use in becoming OA compliant. Additionally, an OA Test Facility is provided at NSWCDD for hosting early validation efforts by various programs of record in evaluating their progress toward OA compliance. All of these activities are being scaled to support ASN RDA and OPNAV direction to institute Open Architecture at the enterprise level and will be executed in a wide variety of locations.										
F. MAJOR PERFORMERS:										
NSWC/ Dahlgren - Dahlgren, Virginia - Technical Authority for OA Program for PEO IWS NUWC - NAVAIR - Industry: Raytheon, Lockheed Martin										

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Exhibit R-3 Cost Analysis (page 1)											February 2005			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME									
RDT&E, N / BA-4			0603382N Advanced Comba		0324 Advanced Combat System Technology/9348 Improved Combat Information Center									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Ancillary Hardware Development														
Component Development														
Systems Engineering	SS/CPFF	APL / Baltimore, MD	10.852	0.000		0.000		0.000		0.000		0.000	10.852	
Systems Engineering	WR	NSWC / Dahlgren, VA	18.813	12.349	12/03	31.573	10/04	30.117	10/05	30.277	10/06	Continuing	Continuing	
Systems Engineering	CPAF	Lockheed Martin, NJ	0.000	0.000		34.300								
Systems Engineering	WR	NAWCAD / St. Inigoes, MD	2.000	0.000		0.000		0.000		0.000		0.000	2.000	
Training Development		ONR	0.000	2.301										
Licenses														
Tooling														
GFE														
Award Fees						0.600								
Subtotal Product Development			31.665	14.650		66.473		30.117		30.277		Continuing	Continuing	
Remarks:														
Development Support	WR	Miscellaneous	0.572									Continuing	Continuing	
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Award Fees														
Subtotal Support			0.572	0.000		0.000		0.000		0.000		Continuing	Continuing	
Remarks:														

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 7 of 10)

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Exhibit R-3 Cost Analysis (page 2)												February 2005			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME										
RDT&E, N / BA-4			0603382N Advanced Combat System		0324 Advanced Combat System Technology/9348 Improved Combat Information Center										
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WR	Miscellaneous	0.371									0.000	0.371		
Operational Test & Evaluation															
Live Fire Test & Evaluation															
Test Assets															
Tooling															
GFE															
Award Fees															
Subtotal T&E			0.371	0.000		0.000		0.000		0.000		0.000	0.371		
Remarks:															
Contractor Engineering Support															
Government Engineering Support															
Program Management Support	WR	Miscellaneous	1.221	0.348	11/03	0.478	TBD	0.049	TBD	0.476	TBD	Continuing	Continuing		
Travel															
Labor (Research Personnel)															
SBIR Assessment															
Subtotal Management			1.221	0.348		0.478		0.049		0.476		Continuing	Continuing		
Remarks:															
Total Cost			33.829	14.998		66.951		30.166		30.753		Continuing	Continuing		
Remarks:															

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Exhibit R-2, RDTE Budget Item Justification
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EXHIBIT R4, Schedule Profile																DATE: June 2004																																																							
APPROPRIATION/BUDGET # PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME																																																											
RDT&E, N /BA-4												0603382N Advanced Combat System Technology												0324/Advanced Combat System Technology/9438/Improved Combat Information Center																																															
Fiscal Year												2004				2005				2006				2007				2008				2009				2010				2011																															
												1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																												
Acquisition Milestones																																																																							
OA Technical Stds & Design Guidance Design Reviews																		9/1 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △																													
OA Functional Architecture Design Reviews																		9/1 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △				9/30 Design Review △																													
Test & Evaluation Milestones																																																																							
DDX Rel OA Validation Tests																		7/15 REL 3 Validation Test △				7/15 REL 4 Validation Test △				7/15 REL 5 Validation Test △				7/15 REL 6 Validation Test △				7/15 REL 7 Validation Test △																																					
CG/DDG OA Validation Tests of Spirals																		4/15 Spiral 1 Validation Test △				4/15 Spiral 2 Validation Test △							4/15 Spiral 3 Validation Test △				4/15 Spiral 4 Validation Test △																																						
CG/DDG OA																																																																							
LCS OA Validation Tests																																																																							
CVN/L-CLASS EDM																																																																							
Production Milestones																																																																							
Deliveries																																																																							

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* Not required for Budget Activities 1, 2, 3, and 6

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Exhibit R-2, RDTEN Budget Item Justification
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Exhibit R-2, RD TEN Budget Item Justification
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